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TeenDrivingPlan Supporting Families of Learner Teens

Presented by:

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**Center for Injury Research &
Prevention**

Speed Management



Driving Environments







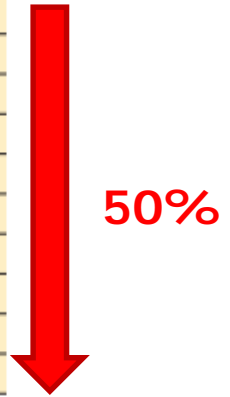
MVC STILL LEADING CAUSE OF DEATH FOR YOUNG DRIVERS

Table 1

Fatalities in Crashes Involving a Young Driver, by Person Type and Year, 2004–2013

Year	Young Driver (15–20)	Passenger of Young Driver				Occupants of Other Vehicles	Nonoccupants	Total
		<15	15–20	21+	Unknown			
2004	3,634	317	1,530	548	7	2,113	633	8,782
2005	3,474	229	1,429	533	6	1,946	624	8,241
2006	3,490	235	1,387	550	5	1,912	632	8,211
2007	3,190	223	1,371	443	7	1,829	631	7,694
2008	2,742	170	1,067	421	4	1,527	521	6,452
2009	2,343	145	958	351	2	1,381	469	5,649
2010	1,965	130	845	356	2	1,250	493	5,041
2011	1,993	118	777	298	1	1,122	473	4,782
2012	1,880	88	682	286	4	1,230	502	4,672
2013	1,691	120	623	307	1	1,128	463	4,333

Source: Fatality Analysis Reporting System (FARS) 2004–2012 Final File, 2013 Annual Report File (ARF).



- In 2013, 4,333 fatalities occurred with a teen driver behind the wheel
- 1,691 drivers ages 15-20 years old died in a MVC crash
- 2,642 fatalities were passengers, occupants of other cars, non occupants
- 10% decrease from 2012

SERIOUS TEEN CRASHES: THE BIG THREE CRITICAL ERRORS

95% of teen crashes due to ERROR

Most Common Critical Errors:

21% Scanning/hazard detection

19% Distraction

21% Too fast for conditions

TOP 4 CRASH SCENARIOS

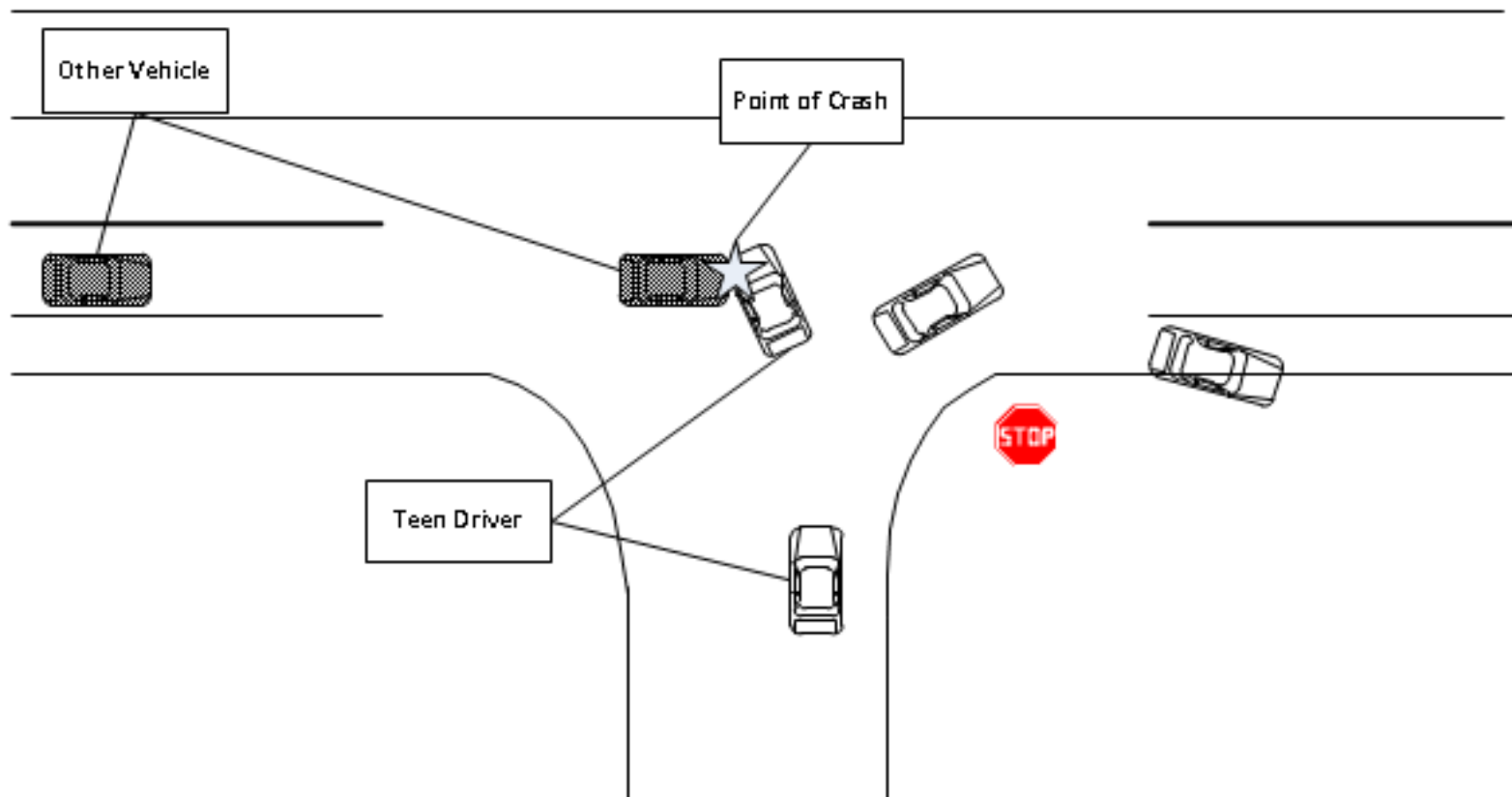
- Analysis of NHTSA data (NMVCCS):
 - 676 teen driver crashes
- Top 4 crash scenarios

Crash Type	Weighted %
Turn into opposite directions (turning left)	11.9%
Right roadside departure	10.3%
Rear-end collision	9.6%
Left roadside departure	9.6%

McDonald, Tanenbaum, Lee, Fisher, Mayhew & Winston,
Transportation Research Record, 2013.

NMVCCS EXAMPLE

LEFT TURN ACROSS PATH



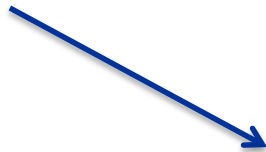
Exemplar scenario 1: Left turn at t-intersection with no obstruction

Note: Recreated in Visio from scenario drawing from http://www.nass.nhtsa.dot.gov/nmvccs_pub/SearchForm.aspx for Case ID 2007005289982

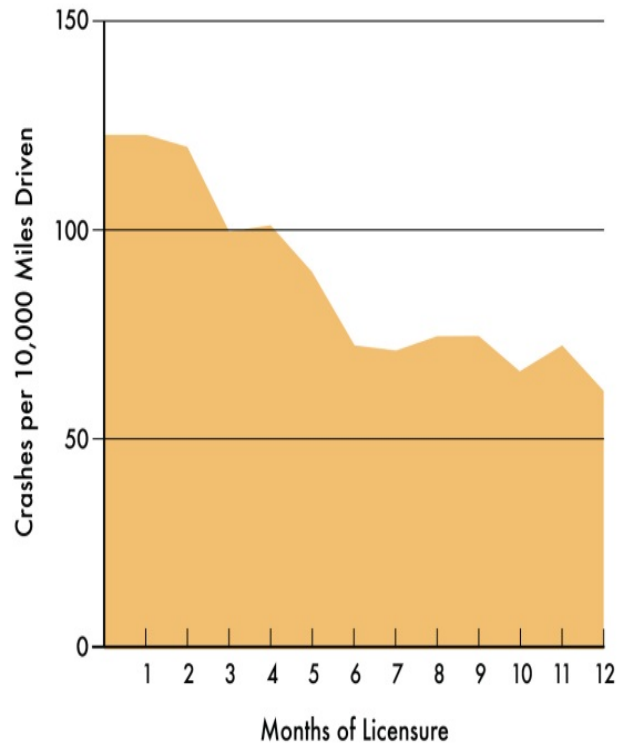
CAN'T FORGET ROLE OF ADOLESCENCE

Teens may take risks

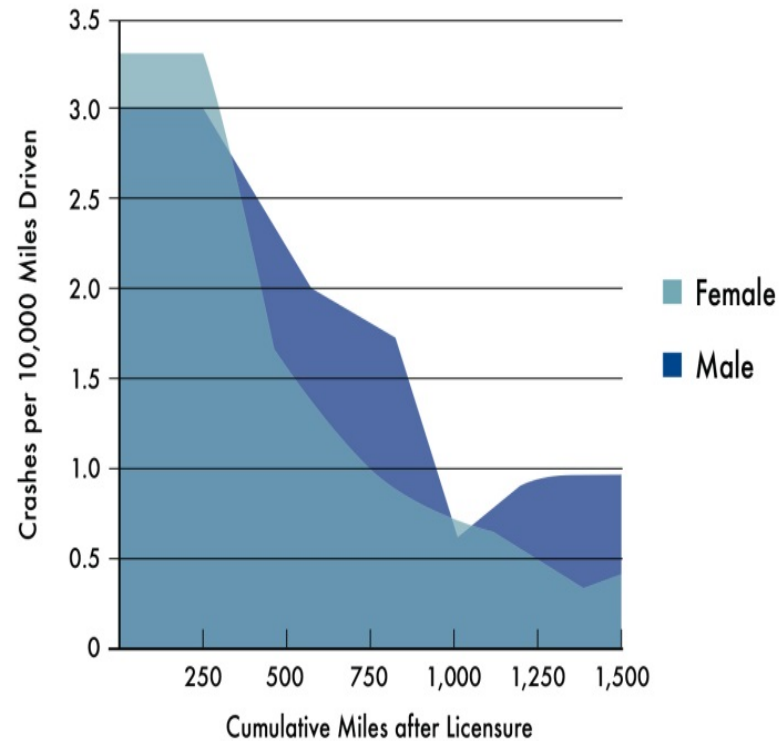
Healthy experimentation → impulsive choices in
MV → severe outcomes



WHEN TO INTERVENE



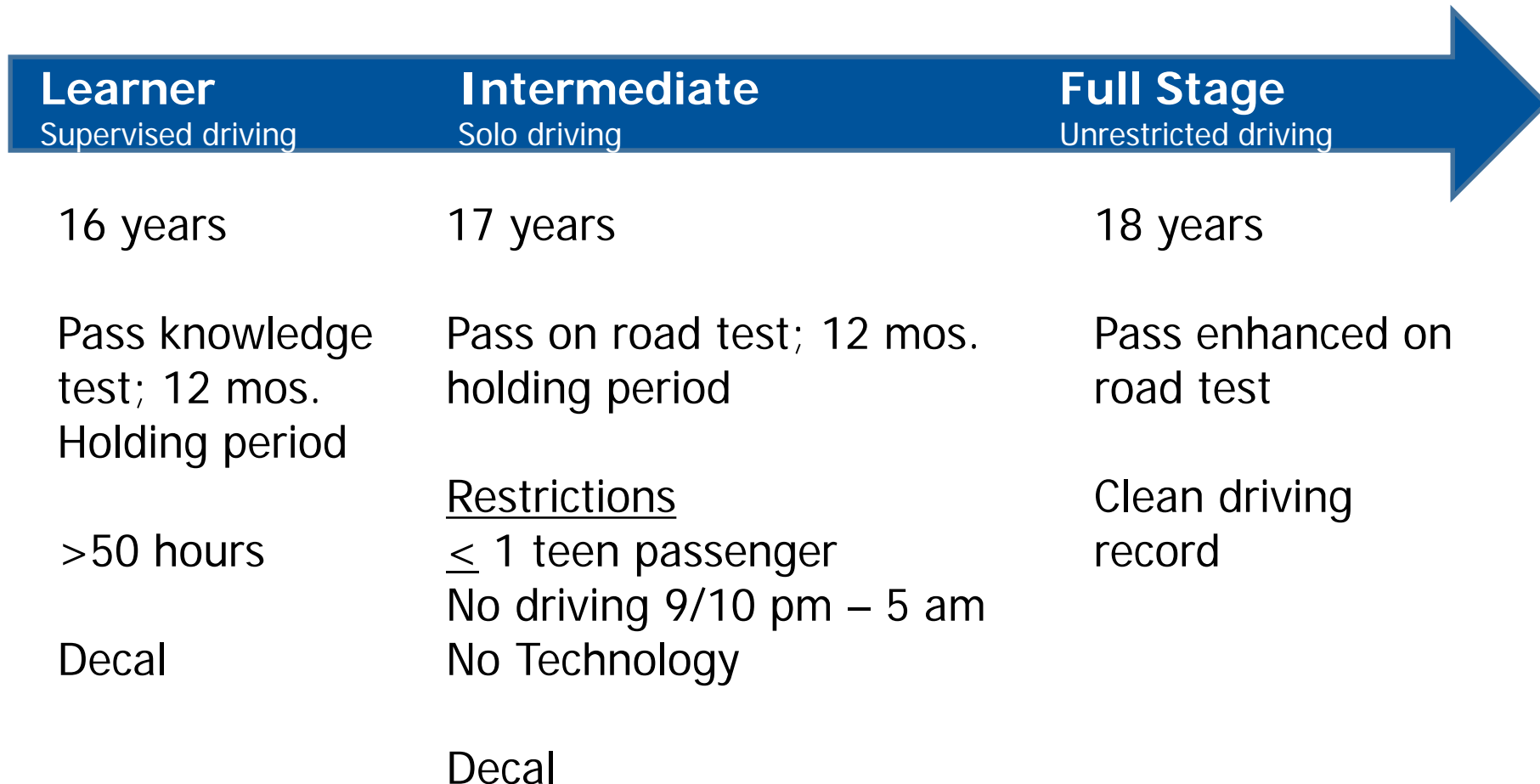
Mayhew, D. R., Simpson, H. M., & Pak, A. (2003).
Changes in collision rates among novice drivers during the
first months of driving.
Accident Analysis & Prevention, 35(5), 683-91.



McCartt, A. T., Shabanova, V. I., & Leaf, W. A. (2003).
Driving experience, crashes and traffic citations of
teenage beginning drivers.
Accident Analysis & Prevention, 35(3), 311-20.

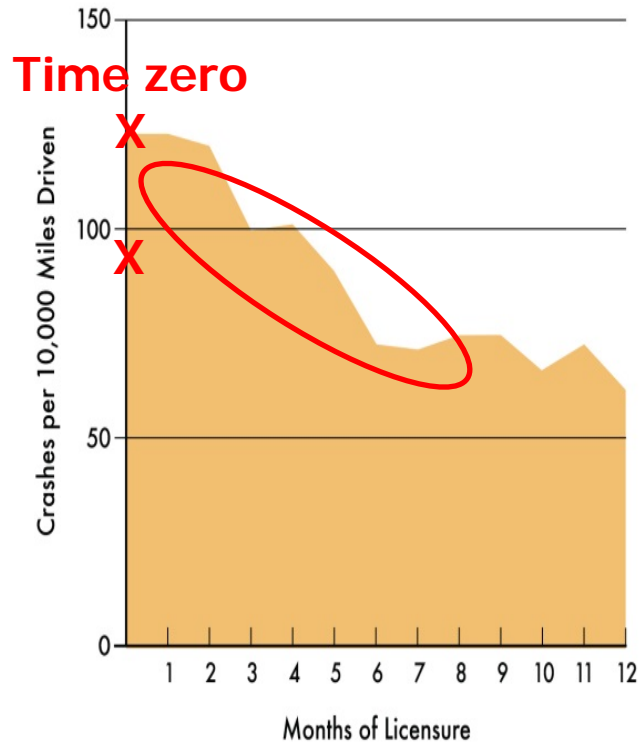
GRADUATED DRIVER LICENSING

Reduces Crash Risk by up to **40%**

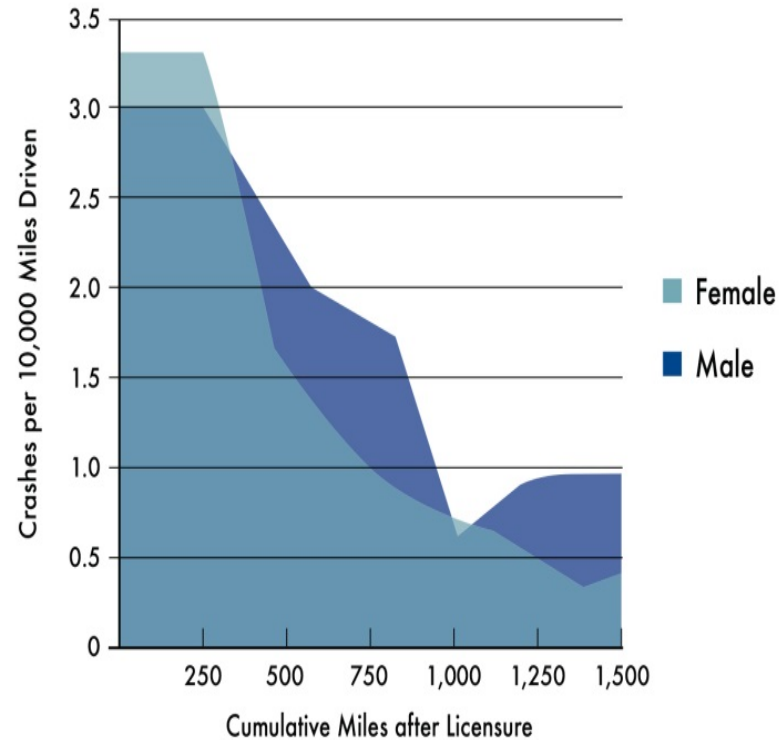


Source: TIRF and National Safety Council, 2015

WHEN TO INTERVENE



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WHY PARENTS MATTER



- 87% of teens report parents involved in teaching them to drive
 - 40% only have parents teaching them to drive
- Involved parents that set rules and monitor can lower teen crash risk by half
 - 2xs as likely to wear belts
 - 70% less likely to drink & drive
 - Half as likely to speed
 - Less likely to drive with multiple passengers

WHAT ABOUT PARENT SUPERVISORS?

Lack of sufficient quantity, diversity, challenge, instructional quality, and fidelity to real-world driving

Foss et al., 2012; Mirman & Kay, 2012; Tronsmoen, 2011

Parents vary: desire & ability to be involved supervisors

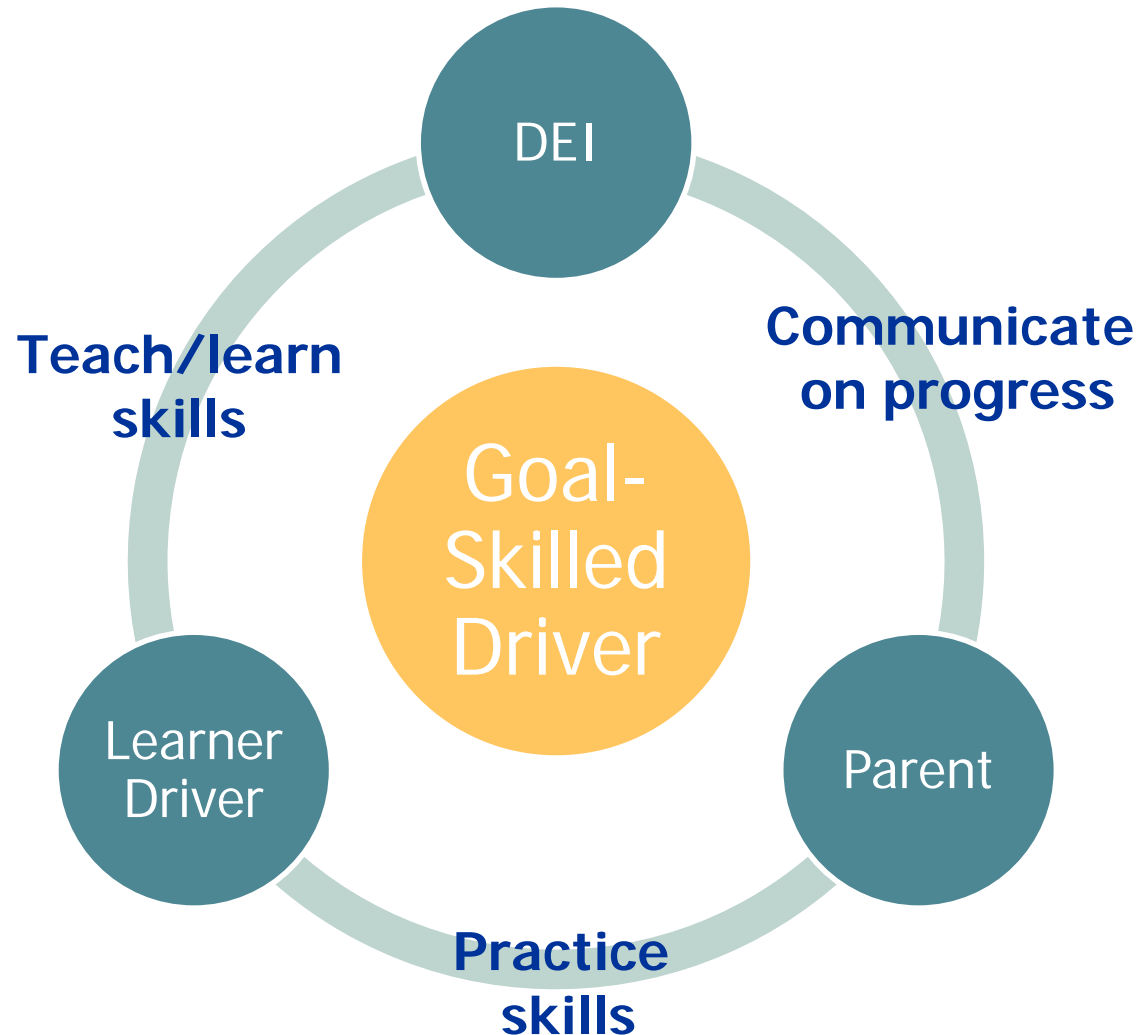
Sherman et al, 2004; Williams et al, 2006

“Parents are too close to the teen; parents might not be able to tell what the teen needs to know. Also the parents just might not know what needs to be taught.”

“He learns from the parent instructing. It all comes down to time and practice driving with the parent.”

LEARNER PERMIT STAGE OF GDL

IDEAL SITUATION



WORKING HYPOTHESIS:

If we can make parent a more effective supervisor of their teen's driving practice → We can have that teen enter independent driving with more driving skill → Lowering teen's crash risk.

TeenDrivingPlan (TDP)

Foundational Research

Literature Review

Scientific, government, and industry publications

Mastery-based environmental training approach

DEI Focus Groups

Little improvement from one instructional visit to the next
Minimal and unvaried practice

Parent Interviews

66 parents of permit applicants

Inexperience, unintentional and deliberate errors and developmental issues; but not focused on important skill deficits; vary in expertise and comfort
Mirman & Kay, 2012 JAR

Focus Groups with Parents and Teens

26 focus groups; 97 parents and 171 teens

Supportive of mastery-based environment approach
Need flexibility
Hafetz et al., 2011 SRCD

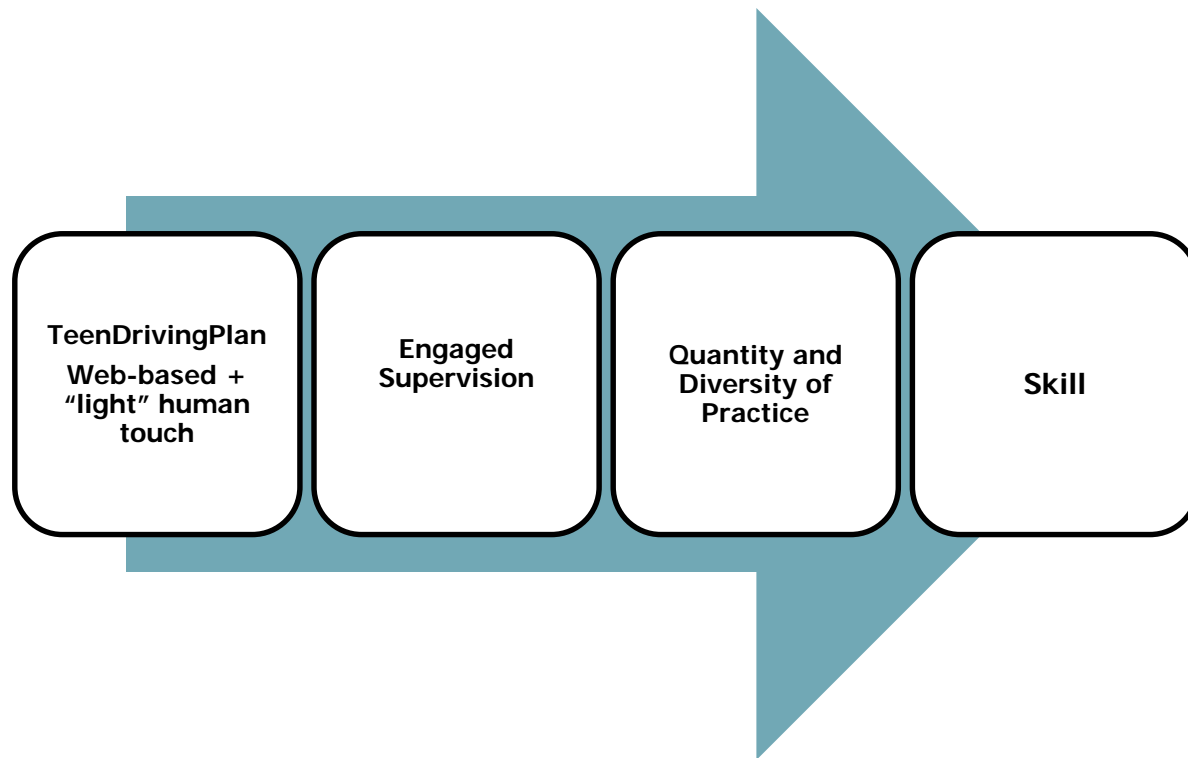
Dyad Survey

309 dyads, National Cross-sectional, self-report study

Engaged practice supervisors:
Mutual social support and parents' self-efficacy, normative pressure, not stressed
Mirman et al., 2014 AA&P

TeenDrivingPlan (TDP)

Impact Theory



TeenDrivingPlan (TDP)

Creative and Functional Development

Content Development

Iterative content development and review process including scientists, developers, and DEIs; Mapped to program theory

Usability Testing

< 3 minutes in the system

Process Evaluation

16 families for 6 weeks

Support for implementation fidelity: Learning, logging, but some difficulty with planning

Mirman et al., TRR, 2012

TeenDrivingPlan
Web-based +
"light" human
touch

Support
Effective &
Engaged
Supervision

Quantity and
Diversity of
Practice

Skill



TeenDrivingPlan Functionality

PRACTICE DRIVE TUTORIAL

MY PLANS MY LOGS TUTORIALS PARENT CORNER SCREEN ML11

MY LOGS

CONGRATULATIONS!

You have completed 1 hour and 1 minute of practice.

Do you want to log a new practice drive?

YES

Most Recent Practice Drives

Practice Drive	Goals Practiced	Supervisor
Practice Drive #6 01/20/2011 at 09:00pm	Introduction to Scanning Stopping and Starting Controlled Intersections	Legal Guardian
Practice Drive #5 01/03/2011 at 09:00pm	Monitoring Blind Spots	Legal Guardian

Print Practice Summary View All Practice Drives

TEEN DRIVING PLAN

MY PLANS MY LOGS TUTORIALS PARENT CORNER

TUTORIALS

BACK TO TUTORIALS HOME
BACK TO RESIDENTIAL
SCANNING AND HAZAR...

SCANNING AND HAZARD DETECTION

What is Residential?



BACK CONTINUE



TEEN DRIVING PLAN

TUTORIALS PARENT CORNER

PLAN A PRACTICE DRIVE

Select Goals

Which goals would you like to practice?

Parking Lot	Prior Goal Performance	Residential	Prior Goal Performance
<input type="checkbox"/> Introduction to Scanning		<input type="checkbox"/> Controlled Intersections	
<input type="checkbox"/> Stopping and Starting		<input type="checkbox"/> Driving Straight	
<input type="checkbox"/> Introduction to Lane Positioning		<input type="checkbox"/> Scanning and Hazard Detection	
<input checked="" type="checkbox"/> Backing Up		<input checked="" type="checkbox"/> Speed Management I	
		<input type="checkbox"/> Uncontrolled Intersections	
		<input checked="" type="checkbox"/> Turning	

BACK CONTINUE

RANDOMIZED CONTROL TRIAL DESIGN

TeenDrivingPlan (TDP)	Control Condition
A psycho-educational internet-based intervention	PA Driver's Manual
Welcome Call	Welcome Call
Non-use call placed if < 2 log-ins per 3-week time period	

Overview

- Randomized, single-blind, longitudinal RCT; 3:2
- December 2011 to January 2013
- Sample of parent-teen dyads from primary care practices and the community; n=151
- < 5 hours of BTW practice at enrollment, internet connection and practice vehicle
- Teenagers could receive up to \$100 and parents up to \$80

DRIVING SKILL – MAIN OUTCOME

Can more deliberate practice driving improve a learner teen's driving performance?

Data Collected:

- Self-reported practice driving across 6 environments and 2 conditions
 - Surveys administered in waves over 24 weeks
- Driving performance measured by validated teen On Road Driving Assessment (tODA)
 - 24 weeks after enrollment
 - Certified professional driving evaluators
 - Blinded to treatment status
 - Terminated assessment if teen's driving was unsafe



DRIVING SKILL – MAIN OUTCOME

teen On Road Driving Assessment (tODA)

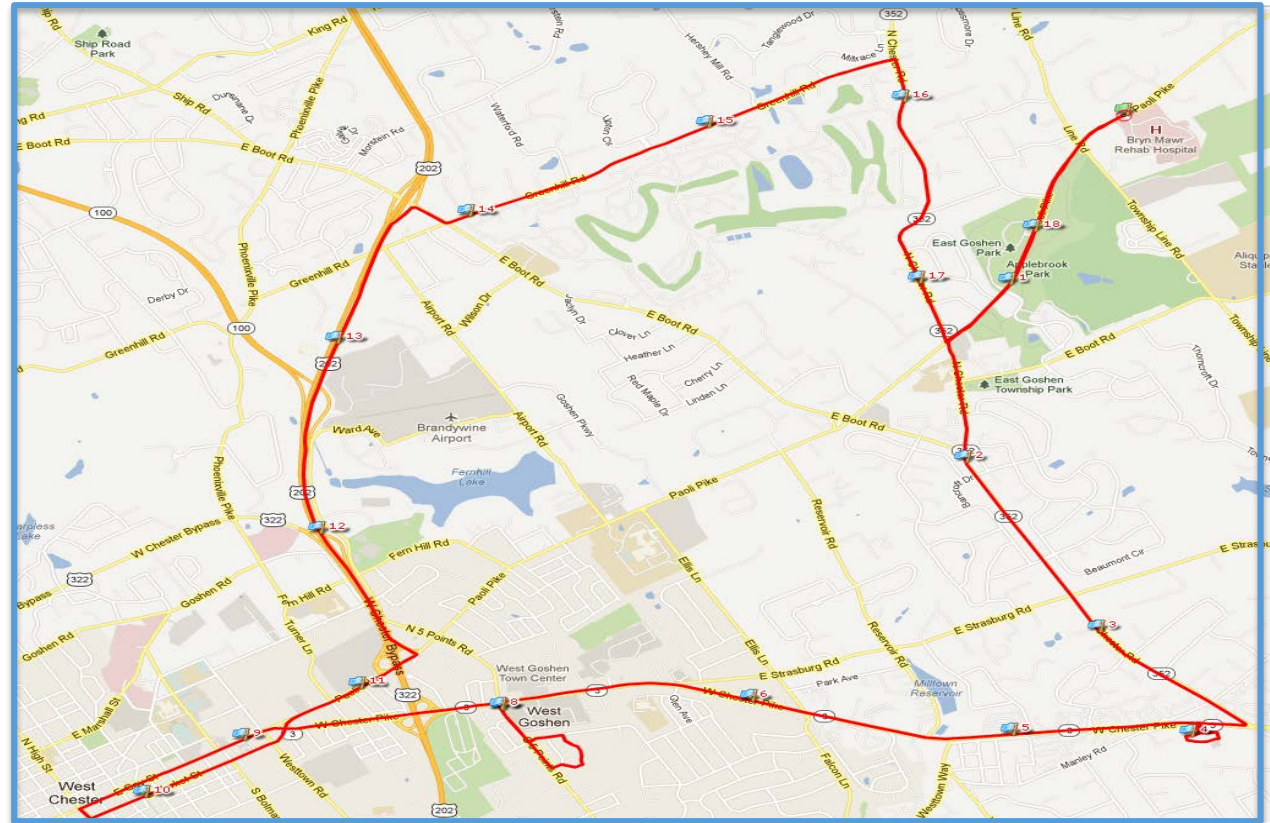
Distance: 30.6 kilometers
(19.0 miles); ~1 hr

7 driving environments

25-55 mph

Professional Evaluators

Dual control vehicle



DRIVING SKILL – MAIN OUTCOME

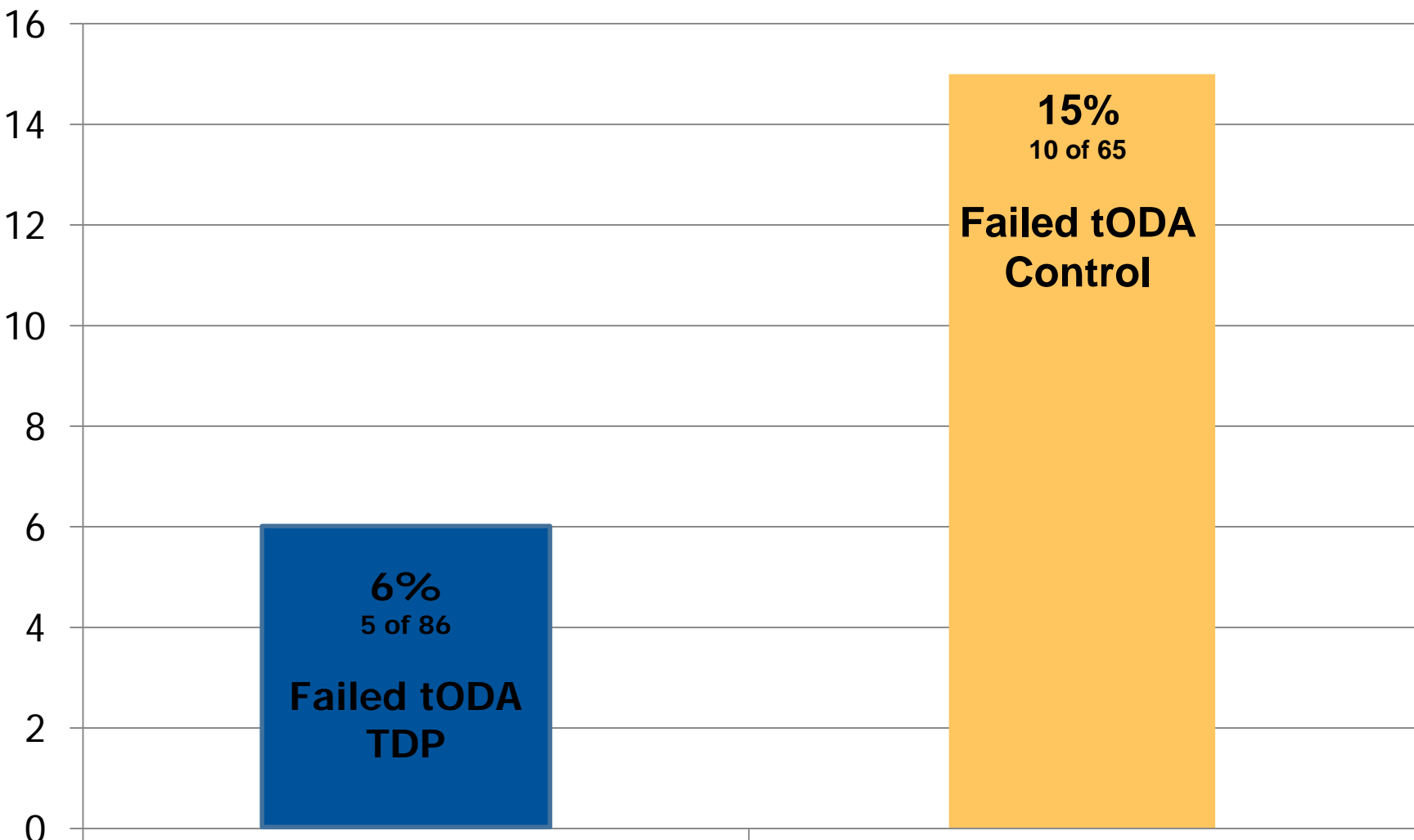
Criteria for Failure of tODA

1. Driver action or inaction that required intervention to avoid a collision
2. Driving task required assistance from the evaluator to be performed safely
3. Violation of a traffic law
4. Evasive action needed by a pedestrian or other vehicle

**Significant difference between intervention and control
was failure to complete the drive**

DRIVING SKILL – MAIN OUTCOME

Mirman, et al. JAMA Pediatrics, 2014



DRIVING SKILL– PROXIMAL OUTCOMES

Mirman et al. *J Adolescent Health*, 2014



TDP → *TDP PRACTICE GUIDE*

KEY ACTIVE INGREDIENTS

Variety of practice

- \geq 1-2 hours in each driving environment

Light human touch

- Research coordinator contact

Interactive content, tools

- Static content not enough

Within broader framework

- TDP delivered within context of CHOP clinical trial

TDP



TDP Practice Guide

Interactive Content



Parent Education Materials

Light Human Touch



Parent Session

Within Supportive Framework





Driver Education programs?

Emphasizing variety of practice

PARENT EDUCATION MATERIALS

- TDP Practice Guide +
 - Brief driving skill videos
 - Logging/ rating tool
 - Goal Guide
 - Tip Sheets
 - Learner permit
 - Intermediate license


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 TeenDrivingPlan Practice Guide


Welcome to the *TeenDrivingPlan Practice Guide* and congratulations on being serious about supervising your teen's practice driving. You are preparing your teen for an exciting and dangerous milestone – driving. High quality practice driving is critical because a major reason why teens crash is their inexperience behind-the-wheel. Research shows that drivers need a variety of practice in a wide range of driving environments to prevent them from committing dangerous driving errors. However, many teens do not get this kind of practice. To address this problem we developed the *TeenDrivingPlan (TDP)*, a web-based intervention to help parents effectively supervise their teens' driving practice.

A randomized-controlled trial found that teens with families that followed the TDP program were **65% less likely** to make dangerous driving errors. These families also increased their variety of practice to boost driving performance.


The *TeenDrivingPlan Practice Guide* includes information and tools from the TDP program to help families make the most out of their practice time together:


VIDEOS

The **videos** help parents learn to be better supervisors. Parents learn about **creating the right learning environment**, specific practice activities, common errors, and signs teens are starting to get the hang of it. (You can watch the videos even before your teenager has his or her permit.) Access the videos by clicking on their images in this document or by visiting the **TeenDrivingPlan Channel** on YouTube.


GOALS

The **Goal Guide** will help remind you of your goals for each drive. A portion of the practice drives should be focused on learning a specific goal or goals. We recommend no more than three goals per driving session. You can print the Goal Guide to keep in your car or download it to an electronic device **here**.


LOG

The **Logging and Rating Tool** helps families track their practice by driving environments and record where their teens need more work. Experts agree that novice drivers need somewhere between 65 to 120 hours of supervised driving practice, but there is more to learning than just how much you practice. You can print the Logging and Rating Tool to keep in your car or download it to an electronic device **here**.

We recommend providing constructive and realistic feedback to your teenager for each drive. Since these conversations can be sensitive, **watch these videos** for parenting tips on communicating with your teen.

This Guide also includes tip sheets for **Making the Most of the Learner Period** and **The Intermediate Period**.

Disclaimer: The content presented in *TeenDrivingPlan Practice Guide* is adapted from the web-based version of the *TeenDrivingPlan*, which is not yet publicly available. This guide is not intended to replace formal instruction by a qualified driver instructor. *TeenDrivingPlan Practice Guide* (2016). Center for Injury Research and Prevention, Research Institute at The Children's Hospital of Philadelphia.

1. Welcome and Introduction
2. Driving Environments
3. Videos by Driving Environments

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LOG

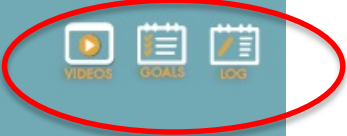
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Driving Environments



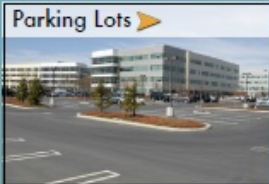
Research shows novice teen drivers need practice in a variety of environments to improve driving performance. The following three skill deficits account for nearly half of all serious crashes involving teen drivers:

- inability to scan, identify, and react to hazards
- difficulty managing speed on different types of roads and conditions
- difficulty managing distraction, both inside and outside the car

Watch these videos to learn how you can help your teen develop the skills to overcome these deficits:

DRIVING ENVIRONMENTS

Provide plenty of practice in all of the driving environments.



THE BASICS >

Help your teen learn how to adjust the seat, mirrors, seat belt, and steering wheel and understand the dashboard.

ADDITIONAL CHALLENGES >

When your teen is ready, try adding real world challenges to the practice drives.



Driving Environments

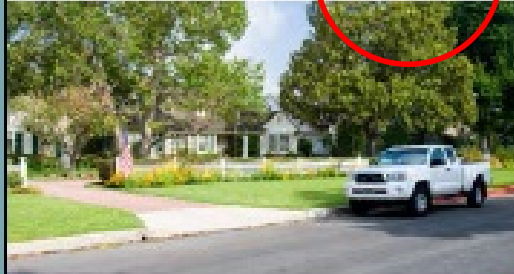
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Parking Lots ➤



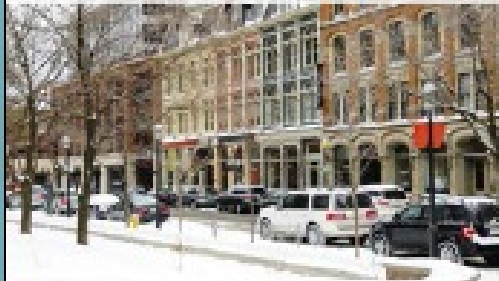
Residential Roads ➤



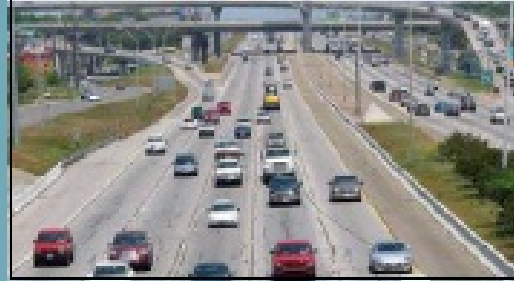
Intermediate Roads ➤



Commercial Roads ➤



Highways ➤



Country Roads ➤



mirrors, seat belt, and steering wheel and understand the dashboard.

challenges to the practice drives.

Residential Roads



Residential Roads: Videos 7 & 8 (of 8)



Goal:

To understand the rules that govern the order of traffic at intersections

Activity:

Parent first goes over the right-of-way rules for each type of intersection. Then while practice driving, the new teen driver should identify the type of approaching intersection and count the number of stop signs at intersections.

Common Errors:

- Not recognizing the type of intersection
- Assuming that another driver will yield the right-of-way
- Not turning from the appropriate lane

Sign Learner Gets It:

- Is able to identify the right-of-way rules that govern each intersection prior to arrival



Goal:

Help the new driver start a scanning routine to detect any potential hazard.

Activity:

To orient the new driver to this task, parent drives along the same route and points out potential hazards. Then, the new driver practices scanning and comments on potential hazards encountered in the neighborhood.

Common Errors:

- Not looking before turning the car
- Looking so hard for other vehicles at intersections and not noticing pedestrians. (Remind your teen to look "Left-Right-Left" before crossing.)

Sign Learner Gets It:

- Looks in the direction the car is going and watches for potential hazards





Playlists in Suggested Order



The Basics

by [TeenDrivingPlan](#)

The Basics 3:00

The Basics: Adjust the Seat Belts 1:02

[View full playlist \(6 videos\)](#)



Parking Lot

by [TeenDrivingPlan](#)

Parking Lot: Stopping and Starting 1:41

Parking Lot: Backing Up 2:33

[View full playlist \(4 videos\)](#)



Residential

by [TeenDrivingPlan](#)

Residential: Speed Management 1:32

Residential: Uncontrolled Intersections 2:03

[View full playlist \(8 videos\)](#)



Intermediate Roads

by [TeenDrivingPlan](#)

[Intermediate Roads: Lane Changing](#) 2:32

[Intermediate Roads: Road Sharing](#) 1:58

[View full playlist \(9 videos\)](#)

Goal Guide



Check when a goal is achieved. It will take several drives to reach a goal. Only check a goal off if it is consistently performed without errors and without verbal instruction or support.

Driving Environments - Parking Lots

Activity	Goal
Backing Up	<input type="checkbox"/> Driver backs up slowly and with control, knowing what's around at all times.
Stopping and Starting	<input type="checkbox"/> Driver operates the car smoothly with control.
Introduction to Scanning	<input type="checkbox"/> Driver develops a scanning routine and uses it consistently.
Introduction to Lane Positioning	<input type="checkbox"/> Driver can easily follow a line and keep the car steady.

Driving Environments - Residential Roads

Activity	Goal
Speed Management	<input type="checkbox"/> Driver maintains an appropriate and steady speed.
Uncontrolled Intersections	<input type="checkbox"/> Driver shows a solid understanding of right-of-way procedures and turns into the appropriate legal lanes.
Turning	<input type="checkbox"/> Driver controls vehicle while turning and observes right-of-way procedures.
Controlled Intersections	<input type="checkbox"/> Driver can safely manage intersections and identify potential hazards.
Driving Straight	<input type="checkbox"/> Driver maintains position in the lane.
Hazard Detection	<input type="checkbox"/> Driver recognizes and anticipates hazards well in advance and uses caution around them.
Right-of-Way	<input type="checkbox"/> Driver is able to identify the right-of-way rules that govern each intersection prior to arrival.
Scanning and Hazard Detection	<input type="checkbox"/> Driver looks in the direction the car is going and watches for potential hazards.



Logging and Rating Tool



Name of Learner Driver: _____ Permit Number: _____

Use the abbreviations for practice locations and overall drive rating from the legend below when filling in the log.

Parking Lots - PL
Residential Roads - RR

Intermediate Roads - IR
Commercial Roads - CR

Highway - H
Country Roads - CR

Assign a 1 if: Many common errors are present; driver needs a lot of verbal or technical support from the supervisor; driver was unfocused, took risks on purpose, or demonstrated disregard for safety.

Assign a 2 if: Beginning to show goal performance without errors. Starting to need less verbal reminders from supervisor.

Assign a 3 if: Needs less verbal reminders from supervisor. Rarely demonstrates common errors and usually demonstrates signs the learner gets it. Drives cautiously and focused.

Assign a 4 if: Consistently performs driving goals without errors under supervision. Supervisor did not need to provide verbal instructions or support.

*For a list of goals, refer to the [Goal Guide](#). **Please note:** Some practice drives will not have a particular goal. Be sure to log those drives as well.

Date	Practice Time _ hrs. _ min.	Practice Location	Extra Challenge?	Goals*	Overall Drive Rating (1 - 4)
//_	_ hrs. _ min.		<input type="checkbox"/> In darkness <input type="checkbox"/> Bad weather		
//_	_ hrs. _ min.		<input type="checkbox"/> In darkness <input type="checkbox"/> Bad weather		
//_	_ hrs. _ min.		<input type="checkbox"/> In darkness <input type="checkbox"/> Bad weather		
//_	_ hrs. _ min.		<input type="checkbox"/> In darkness <input type="checkbox"/> Bad weather		
//_	_ hrs. _ min.		<input type="checkbox"/> In darkness <input type="checkbox"/> Bad weather		
//_	_ hrs. _ min.		<input type="checkbox"/> In darkness <input type="checkbox"/> Bad weather		
//_	_ hrs. _ min.		<input type="checkbox"/> In darkness <input type="checkbox"/> Bad weather		

Total Practice Time: _ hrs. _ min.



PARENT SESSIONS

Goals

- Motivate, educate and empower parents
- Optimize parent-supervised practice
- Systematically orient parents to educational materials



TDP W/IN SUPPORTIVE FRAMEWORK

- Qualified Facilitator in 1:1 or in parent group settings
 - with follow-up booster contact
- Trusted community partners
 - High schools/ school-based DEI
 - Private driving schools
 - Community-based traffic safety organization
 - Health systems, Peds, GP/FP practices
- ...Or weave the tools into your daily practice with parents of learner drivers

HOW TO ACCESS TDP?

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TeenDrivingPlan Practice Guide

Helps parents take action to keep teen drivers safe and learning:



- **Supervise** practice in a variety of places, conditions, and at night
- **Focus** on teaching skills that matter for safety
- **Track** skill development and practice hours

Get the Practice Guide at teendrivingplan.org

WHAT'S NEXT?

- NIH grant to look at RCT data to explore impact of TDP on time to licensure and crash rates of study participants as early licensed drivers.
- In FY 2017, licensing agreements for limited co-branding available for a fee
 - Research and developed by CHOP
 - Distributed by XXXX



FOR MORE INFORMATION



Dissemination/Partnership/
Sponsorship Contact:

Suzanne Hill

hillsu@email.chop.edu

Get the Practice Guide at teendrivingplan.org